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ABSTRACT

The integration of technology into adult literacy promises both exciting and problematic times, especially with regard to curriculum evaluation. Different evaluation approaches have various strengths and weaknesses. A particular strength of the adversarial approach is a well-rounded evaluation with both positives and negatives identified; its main weakness is that it is less inclusive. The main strength and weakness of the comparative and case study approaches is that their best use is to evaluate standardized curriculum. The most effective is the participatory approach. Its main benefit is its capture of the program context; however, it depends on the ability of many stakeholders to reach an accommodation of potentially divergent interests and opinions. Three classic evaluation models have their own strengths and weaknesses. The discrepancy evaluation model provides a great deal of information regarding a program at all stages, but it is resource-heavy and does not capture the qualitative aspects. The CIPP (context-input-process-product) model's main strength and weakness is its ongoing and comprehensive nature. One main strength of the contingency-congruency model that could also be considered a weakness is its deliberate search for judgements regarding the value of various aspects from a wide range of stakeholders. Aspects of technology must be considered in any curriculum evaluation: different types, computer use, and desirability and impact of technology. (Contains 38 references.) (YLB)

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INTEGRATING TECHNOLOGY INTO CANADIAN ADULT LITERACY PROGRAMS: CURRICULUM EVALUATION CONSIDERATIONS

L. Herod, MEd, BA, April 2000

INTRODUCTION

The integration of technology--computers in particular--into curricula is a topical issue among educators in general. Among adult literacy practitioners it is particular so. Although the incorporation of computers into adult literacy teaching and learning is heralded by most (Amos, 1998; Ginsburg, 1999; Hopey, 1998; Hopey, Harvey-Morgan & Rethemeyer, 1996; Sabatini & Ginsburg, 1999; Stites, 1999; Stites, Hopey & Ginsburg, 1998; Turner, 1999; Wagner & Hopey, 1998; Wilson, 1998), there are definite concerns. These include:

- the **philosophical** (i.e., the place of technology within literacy teaching and learning);
- the **practical** (i.e., the use of very scarce resources--money, time and personnel--to support technology); and,
- the **educational** (i.e., the effectiveness of technology with regard to literacy teaching and learning).

This paper explores the concept of curriculum evaluation framed against the issue of integrating technology into adult literacy programs. While evaluation is crucial to providing effective and relevant curricula at any time, it is crucial at a point in time when many believe the pressure of technology will undoubtedly result in changes to the field, "We all acknowledge that the information age has had a profound impact on the world around us; thus it is not unreasonable to posit that the information age should also affect the form and function of adult education" (Ginsburg, 1999, p. 45).

CLARIFYING TERMS

Many educators have rightly noted that there is a lack of clarity in curriculum-related terminology (Lewy, 1977; Madaus & Kellaghan, 1992; Wolf, 1990). Miller & Seller (1990), for example, suggest that the meaning of "curriculum" varies widely among practitioners:

> *At one end, curriculum is seen merely as a course of study; at the other end, curriculum is more broadly defined as everything that occurs under the auspices of the [organization]. In the middle of the spectrum, curriculum is viewed as an interaction between students and teachers that is designed to achieve specific educational goals* (p. 3).

As such, it is prudent to define several terms. For the purposes of this paper, the term "curriculum" shall be used in the broadest possible sense and will include content,

resources, process (teaching approach and learning strategies), learners, practitioners, and what Schwab (1993) terms "milieus." "Milieus" refer to political, economic, community/social, and personal factors such as religion, ethnic background, which influence a curricular environment. Madaus & Kellaghan (1992) similarly note that "the terms *evaluation* and *assessment* do not have generally agreed-upon meanings." Often they are used interchangeably when in fact "assessment" refers most commonly to the appraisal of individual learners in terms of their knowledge and/or skills. "Evaluation," on the other hand, has a broader application to curriculum proper and includes those aspects noted under the definition of "curriculum" above.

THE FUNCTIONS OF EVALUATION

As Wolf (1990) aptly suggests, "Educational evaluation is clearly *decision-oriented.* It is intended to lead to better policies and practices in education." Beyond this, however, discussions are commonly framed against the related notions of *formative* and *summative* purposes (Eisner, 1979; Lewy, 1977; Wolf, 1990; Worthen, 1990), terms first offered by Scriven in 1967. Simply put, "formative" evaluation is ongoing and takes place before and during the development of a particular program, while "summative" evaluation takes place upon its completion. In addition to providing information about what to modify within a program (e.g., curricular materials, organization, teaching approach), formative evaluation requires stakeholders to make judgements regarding the worth or value of a program; that is, regarding implementation. As Ornstein & Hunkins (1998) suggest, "In determining the value of a curriculum plan, educators must eventually ask whether the results they expect to obtain are worth what the cost of delivering them is likely to be" (p. 323). This phase of evaluation is crucial for adult literacy programs since there are many philosophical, practical and educational concerns among practitioners regarding the "cost" and relevance of integrating technology. Front-end evaluation would allow adult literacy practitioners to clarify, make decisions, and act on this issue rather than fall victim to the 'steamroller' that is technology (Chandler, 1995; Postman, 1993; Robertson, 1998). Summative evaluation provides information regarding whether or not the objectives of the program were met.

APPROACHES

There appears to be a paucity of research into educational evaluation in general. As Worthen (1990) writes, "There is still little empirical information about the relative efficacy of alternative evaluation plans or techniques or many evaluation components germane to almost any model" (p. 46). At one time, data gathered and interpreted according to the scientific method (i.e. qualitative research), was considered the only acceptable and legitimate data. More recently, however, educators have begun to suggest that qualitative approaches and the descriptive data they provide are as relevant as quantitative approaches (Eisner, 1979; Fetterman, 1988; Ornstein & Hunkins, 1998; Walker, 1978). Indeed, many propose that both approaches are essential to gaining a full understanding of the curriculum being evaluated. Ornstein & Hunkins (1998), for example, write:

> *Those urging use of humanistic or naturalistic procedures argue for a more holistic engagement that presents us with much more detail. With these methods,*

> *we get portraits of the situations we are evaluating. Evaluation reports are less lists of numbers than they are written descriptions of what was found or what occurred. The approach focuses more on human interactions than on outcomes and more on the quality that the quantity of classroom or school life. Scientific approaches may have revealed data that depicted what people did, but naturalistic approaches, while interested in that, are also concerned about delving into the* ***why*** *behind the* ***what*** *of performance* (p. 332).

This has led to a call for *pluralistic approaches* to evaluation. The main barrier to using pluralistic approaches for most areas in education involves resources such as finances, time, and particularly expertise (Borich & Jemelka, 1982; Miller & Seller, 1990). This is magnified in adult literacy programs for several reasons:

- programs are underfunded;
- programs are understaffed and rely heavily on volunteers, thus full/part-time staff have very limited time (much of which is spent fund-raising to keep the program going); and
- curricula are less standardized and formalized than in many other areas of education, thus, expertise in curriculum development and evaluation is minimal.

That said, as in other areas of the curriculum development cycle, knowledge of various approaches to evaluation and understanding of their applicability to individual evaluation situations will maximize the effectiveness of any effort. Several different approaches are outlined in the following section and their strengths and weaknesses noted.

Adversarial Approach

This approach to evaluation is similar to a debate in that it involves evaluators taking up opposite positions regarding a curriculum (Ornstein & Hunkins, 1998; Waters, 1998; Worthen, 1990). A particular strength of this approach is that it can result in well-rounded evaluation in the sense that both positives and negatives are deliberately identified and discussed. In other approaches there is the potential at least for the evaluation to be skewed, either intentionally or unintentionally. The main weakness of this approach is that it is less inclusive than other approaches; that is, it is a somewhat competitive process involving teams of evaluators versus a collaborative effort among a variety of curriculum stakeholders. As such, although strengths and weaknesses are identified, these may somewhat narrow since stakeholder input is neglected. In terms of the applicability of this approach to adult literacy, it may be that it would be most useful at the national and/or provincial level. That is, it would be useful for practitioners to evaluate the philosophical, practical and educational aspects surrounding the issue of technology in a global manner before moving onto more detailed, specific evaluation at the regional and local level.

Comparative and Case Study Approaches

As its name indicates, this approach compares various aspects of curriculum (Eisner,

1979). Both its main strength and weakness is that it is best used to evaluate *standardized* curriculum. In view of this, its use in adult literacy would be limited since programs are individualized in many respects (e.g., curriculum - informal, non-standardized; focus - workplace literacy, family literacy, ABE/GED; group size - small group versus one-to-one tutoring). A case study approach (Saez & Carreto, 1998), in which the minutiae of individual curriculum are more easily captured and evaluated would be the better choice. Although there is much to be gained from both approaches, it is unlikely that either will be used by the field anytime in the near future; the comparative approach because historically provinces/regions do not conduct evaluations, and the case study approach because it requires a degree of expertise lacking in the field.

Participatory Approach

The most effective approach for use in the field is likely the participatory approach. Simply put, participatory evaluation is conducted by program participants for program participants, guided by trained evaluation personnel. Participants or "stakeholders" (Brandon, 1999) may include practitioners/academics, learners, volunteers, Board members, and representatives of what was described earlier as program "milieus" (Schwab, 1976) (e.g., community members, politicians, business people) The main benefit of this approach is that it captures the context of the program and thus, the needs/wants/interests of a wide range of stakeholders, more fully than other approaches. From a purely practical point of view, as Miller & Seller (1990) point out, "Acknowledgement of different points of view about the effectiveness of a curriculum provides more alternatives to the decision makers" (p. 324). Thus, putting many heads together will ostensibly result in "painting the bigger picture." And therein lies the potential weakness of this approach; the process is dependent on the ability of many stakeholders to reach an accommodation of potentially divergent interests and opinions. It is why Schwab (1976), for example, strongly recommended the inclusion of a curriculum specialist who would facilitate the process. It is quite likely that most adult literacy programs would experience success with participatory evaluation since the prevailing philosophy in the field can be described as humanistic or "transformational" Miller and Seller (1990, p. 8). That is, the emphasis of curriculum is on social and personal change (Barer-Stein & Draper, 1991; MacKeracher, 1996; Merriam & Caffarella, 1991; Selman & Dampier, 1991).

MODELS

Although there are a wide variety of evaluation models, three 'classic' ones are described below. Each has its own strengths and weaknesses and these are noted for each. Choosing a model will depend on understanding these, as well as the intended purpose of the particular model. This is also noted for each.

Discrepancy Evaluation Model

This model was proposed by Provus (Miller & Seller, 1990; Ornstein & Hunkins, 1998)

and essentially looks for any discrepancies between the standards and performance of a program. The information is gathered using a quantitatively-oriented approach and is passed to program decision-makers to act upon in each of the following five areas:

- design - should the program be implemented, modified or rejected;
- installation - is the program operating as it was intended;
- processes- are the interactions, teaching approach, etc., adequate;
- products - did the program achieve the objectives it was supposed to; and,
- cost - were the benefits worth the costs?

The main strength of this model is that it provides a great deal of information regarding a program at all stages for decision-makers. In terms of adult literacy, however, this model has two main weaknesses: a) it is resource-heavy; and, b) it does not capture the qualitative aspects of a program. Although the management-related aspects of a program are important, in adult literacy they are secondary or at least on par with humanistic concerns. For example, in the 1990's when the Harris government was brought into power in Ontario, an evaluation of literacy programs was conducted which focused on the success of programs in terms of employment-related learning objectives. That is, were programs contributing to the employability of participants? While this is a goal that many literacy learners are working toward, many simply seek to improve the quality of their lives and those around them. They may wish to become less dependent on family and friends, they might want to be better able to help their children with homework, and so on. The Ontario government evaluation did not capture what might be described as the more qualitative aspects of literacy learning. Participants in general "transform" (Miller & Seller 1990) into more fully-functioning individuals, family members and citizens who may or may not be employed, but who contribute in many equally important ways to society nevertheless.

CIPP (Context-Input-Process-Product) Model

This model was developed by Stufflebeam (Miller & Seller, 1990; Ornstein & Hunkins, 1998; Worthen, 1990) and much like the Provus model, several types of evaluation information are gathered for decision-makers to act upon. These include:

- program context - the environment in which the program currently operates, including both internal and external factors, and the expected and actual current performance of the program;
- input - examines the feasibility of alternatives for meeting program objectives with the most effective use of resources;
- process - examines the efficacy of the program design from an operational or procedural perspective; and,
- product - examines whether or not anticipated objectives have been achieved.

The main strength of the CIPP model is also its main weakness, at least for adult literacy programs. That is, it is ongoing and very comprehensive, thus evaluations using this model are resource-heavy, far beyond what the majority of programs could manage. In addition, much like the Provus model evaluation information in this model is gathered for program managers and in a quantitatively oriented manner. While there may be instances when this would useful to adult literacy programs, there is a greater need for models which adopt a participatory approach in which collaborative decision-making among a wider range of stakeholder is allowed for. In addition, models which adopt a combination of qualitative and quantitative methods would be more in keeping (and thus provide capture valuable information) with the "transformational" orientation of this field.

Contingency-Congruency Model

This model was developed by Robert Stake (Miller & Seller, 1990; Ornstein & Hunkins, 1998; Worthen, 1990) and in contrast to the Provus and Stufflebeam models, uses a qualitatively oriented and collaborative approach versus a management oriented approach in which information is gathered for program managers. Three basic types of information are gathered in this model including:

- antecedents - information regarding factors in the educational environment that exist prior to the program and which may affect outcomes such as learner characteristics (e.g., prior performance, psychological tests), teacher characteristics (e.g., years of experience, subject matter expertise), and resources (e.g., availability, quality);

- transactions - information regarding the process of teaching and learning such as teacher-student interactions, interactions with curricular materials, environment interactions (e.g., organization of time allotment, space arrangement); and,

- outcomes - information regarding both short and long-term 'products' of the program such as changes in cognition/affect, not only with regard to students, but in other stakeholders such as teachers, administrators, and in the greater community.

In each of the three areas or phases of a program, Stake's model examines what was *intended* and what was *actually observed*. One of the main strengths of this model in terms of adult literacy programs is that it deliberately seeks judgements regarding the value or worth of various aspects of the phases from a wide range of stakeholders. Conversely, this may be considered a weakness in that a great deal of skill and experience may be required on the part of the evaluator to accommodate divergent views/needs/wants. However, based on the underlying philosophy of adult literacy (humanistic, democratic, transformational), this represents a particular strength. As with the Stufflebeam and Provus model, however, this approach is resource heavy and as such, makes it a dubious choice.

Evaluation Strategy for Non-Specialists

As in the case of determining an approach to evaluation, one's choice of models will depend on many factors, not the least of which is the availability of experienced evaluators. The lack of curricular expertise in the field of adult literacy severely limits the likelihood that any of the above-mentioned models would be used since they require a knowledgeable specialist and substantial resources. However, this is not to say that evaluation should not be conducted at all. Rather, an awareness of evaluation approaches and models, combined with will and a simpler strategy can go a long way toward effective evaluation. As cited by Miller and Seller (1990, p. 324-327), Leithwood offers just such a strategy:

- Define the evaluation problem (e.g., define the problem, identify stakeholders, generate a list of ranked decisions to be made)
- Choose an appropriate methodology (e.g., identify the questions to be asked, sources of information, methods for collecting data, etc)
- Plan for data collection, analysis and reporting (e.g., identify the major tasks, sub-tasks, and responsibilities, and develop a timeline)
- Collect and compile data (e.g., select instruments and samples, collect and compile data)
- Analyze and report data (e.g., summarize data, refine and apply decision rules, report results)

This leaves room to use a 'toolbox' approach; that is, to fill in the details at each stage with bits and pieces taken from the various approaches/models which, are relevant to the particular situation, and suitable to the skill of the evaluator(s) and available resources.

CONSIDERATIONS

In closing, a review of the literature regarding technology in adult literacy indicates that there are many aspects of technology which will need to be considered in any curriculum evaluation (Amos, 1998; Cort & Disario, 1996; Garner, Dilloway & Whiten, 1999; Ginsburg, 1999; Hopey, 1998; Hopey, Harvey-Morgan & Rethemeyer, 1996; Rosen, 1997; Sabatini & Ginsburg, 1999; Provenski; 1999; Stites, 1999; Stites, 1998; Stites, Hopey & Ginsburg, 1998; Turner, 1999; Wagner & Hopey, 1998; Wilson & Javed, 1998). These are loosely grouped below and represent a beginning versus exhaustive list:

Different Types of Technology

Although the main technology to be evaluated would be computers, programs also have other types of technology that would also need to be included in any evaluation: These might include:

- Other Instructional Technologies - technology used in instruction other than the computer such as video/audio-conferencing, video/audio cassettes, television, etc.
- Assistive Technologies - various hardware and software (e.g., tape recorders, computers, calculators, speech-to-text writers, etc) used to assist students with learning disabilities.
- Administrative Support Technologies - (e.g., telephone, fax, photocopier, etc).

Computer Use

- Instructional:

  - The computer as curriculum (i.e., operation of the computer and software)

  - The computer is used to deliver instruction (i.e., curriculum is delivered via the computer - online course, a software program, etc)

  - The computer is used to support instruction (e.g., practitioners/tutors use various software programs and the Internet to develop curriculum, learners use the Internet for research, use various software programs to complete learning activities, etc).

- Administrative (e.g., communicate via email, record keeping, word processing, data storage, accounting, fund-raising, disseminate program information)
- Technical (installing, maintaining, fixing and upgrading equipment and software)

Desirability and Impact of Technology

These considerations can be grouped into the themes described in the introduction to this paper:

- **Philosophical**

  - Time, effort and knowledge will be required to integrate computers into the curriculum--will this overtax programs that are already stretched?

  - Do learners and staff want to learn/use technology? Do they feel that they benefit from its use?

- **Practical**

  - Are there enough computers and are they in working order?

  - Is the Internet available, reliable and affordable?

  - Are the operating systems, software programs and peripheral equipment

such as printers easy to use?

- Is there a plan in place to purchase, install, maintain and upgrade equipment and programs?

- Is there a professional development plan in place for staff/volunteers to learn the computer?

- **Educational Efficacy**

- Are low literacy learners able to learn to use the computer?

- How can the computer be used to promote and/or enhance learning? What features may detract from learning?

- Are staff able to develop curriculum which integrates applies the computer in learning in an effective and relevant manner? Is there an adequate professional development plan in place to assist with this?

CONCLUSION

The integration of technology into adult literacy promises both exciting and problematic times for the field of adult literacy. It is through evaluation efforts at all levels that best practices and lessons learned will be identified and the field will move forward in a relevant and effective way. One such detailed evaluation effort is *Cyberstep*, a ambitious and comprehensive three-year curriculum development and evaluation project out of the Vocational and Adult Education Department of California State University which promises to provide a great deal of valuable information regarding technology and curriculum standards (i.e., content, assessment, technology, interface, management system, and template). One aspect of this project that may be particularly appealing for Canadian adult literacy practitioners is the creation of course content and assessment "templates" that can be individualized by users to suit their particular needs. A similar effort in Canada would greatly speed the creation and lower the cost of creating instructional materials. It is, however, crucial that practitioners look to evaluation efforts such as these, as well as conduct their own evaluations, in order to learn about the best and worst that technology can offer adult literacy:

> *The potential for technology to expand and improve learning by adults is especially great. To take advantage of technology's potential, adult educators, planners, and policymakers need to critically access the performance of the technology and the quality of learning that technology supports* (Stites et al, 1998, p. 1).

REFERENCES

Amos, D. (1998). Will Technology Divide Us? Retrieved July 1998 from the World Wide Web, http://archive.abcnews.go.com/sections/scitech/rev_haves1125/index.html.

Barer-Stein, T. & J. Draper (1991). The Craft of Teaching Adults . Toronto: Culture Concepts.

Borich, G. & Jemelka, R. (1982). *The decision-oriented nature of program evaluation.* In G. Borich & R. Jemelka Programs and Systems: An Evaluation Perspective. New York: Academic Press. Pp. 27-54.

Brandon, P. (1999). *Involving program stakeholders in reviews of evaluators' recommendations for program revisions.* Evaluation and Program Planning, 22. Pp. 363-372.

Chandler, D. (1995). Technological or Media Determinism. Retrieved July 1998 from the World Wide Web, http://www.aber.ac.uk/media/Documents/tecdet/tecdet.html.

Cort, M. & Disario, N. (1996). Creating a Technology Plan: A Step-by-step Guide and Worksbook for Adult Literacy Providers. Eric Document No. 418228

Eisner, E. (1979). *The functions and forms of evaluation.* In E. Eisner The Educational Imagination: On the Design and Evaluation of School Programs. New York: MacMillan.

Fetterman, D. (1988). *Qualitative approaches to evaluating education.* Educational Researcher. 17(8). Pp 17-23.

Garner, R., Dilloway, M., & Whiten, P. (1999). The Job Programme: Supporting Remote Learners with Disabilities or from Disadvantaged Groups. Retrieved April 1999 from the World Wide Web, http://leahi.kcc.hawaii.edu/org/tcon99/papers/garner.html.

Ginsburg, L. (1999). *Integrating technology into adult learning.* In C. Hopey (Ed) Technology, Basic Skills, and Adult Education: Getting Ready and Moving Forward. Retrieved November 1999 from the World Wide Web, http://litserver.literacy.upenn.edu/tech/index.html.

Hopey, C. (1998). *Making technology happen in adult education.* In C. Hopey (Ed), Technology, Basic Skills, and Adult Education: Getting Ready and Moving Forward. Retrieved November 1999 from the World Wide Web, http://litserver.literacy.upenn.edu/tech/index.html.

Hopey, C., Harvey-Morgan, J. & Rethemeyer, R. (1996). Technology and Adult Literacy: Findings from a Survey on Technology Use in Adult Literacy Programs. Retrieved November 1999 from the World Wide Web, http://litserver.literacy.upenn.edu/tech/index.html.

Lewy, A. (1977). *The nature of curriculum evaluation.* In A. Lewy (Ed.) Handbook of Curriculum Evaluation New York: Longman. Pp.3-33.

MacKeracher, D. (1996). Making Sense of Adult Learning. Toronto: Culture Concepts.

Madaus, G. & Kellaghan, T. (1992). *Curriculum evaluation and assessment.* In P.

Jackson (Ed.). Handbook of research on Curriculum. New York: Macmillan Publishing Company.

Merriam, S. & Caffarella, R. (1991). Learning in Adulthood. San Francisco: Jossey-Bass Inc.

Miller, J. & Seller, W. (1990). Curriculum: Perspectives and Practice. Toronto: Copp Clark Pitman.

Ornstein, A. & Hunkins, P. (1998). *Curriculum evaluation.* In A. Ornstein & P. Hunkins (Eds.) Curriculum: Foundations, Principles, and Issues (3rd Edition). Boston: Allyn & Bacon.

Postman, N. (1993). Technopoly. New York: Vintage Books.

Provenski, S. (1999). Reaching the Basics and Beyond: Computer Software Resources for Adult Literacy. Retrieved 27 November 1999 from the World Wide Web, http://www.nald.ca/fulltext/litech/page1.htm.

Robertson, H. (1998). No More Teachers, No More Books: The Commercialization of Canada's Schools. Toronto, Canada: McClelland & Stewart.

Rosen, D. (1997). Ten Steps to a Technology Plan: A Technology Planning Process. Retrieved February 2000 from the World Wide Web, http://www.lacnyc.org/pubs/technology_reports/tlssum.htm.

Sabatini, J. & Ginsburg, L. (1999). Instructional Technology Utilization Survey of Mid-Western Adult Literacy Programs. Retrieved November 30, 1999 from the World Wide Web, http://www.literacyonline.org/NCRTECSVY/ncrel4.html.

Saez, M. & Carretero, A. (1998). *Evaluating innovation: The case study approach.* Studies in Educational Evaluation 24(1) Pp. 25-43.

Schwab, J. (1973). *The practical 3: Translation into curriculum.* In School Review 81(4). Pp. 501-522.

Selman , G. & Dampier, P. (1991). The Foundations of Adult Education in Canada. Toronto: Thompson Educational Publishing.

Stites, R. (1999). *Adult learning theory: An argument for technology.* In C. Hopey (Ed), Technology, Basic Skills, and Adult Education: Getting Ready and Moving Forward. Retrieved November 1999 from the World Wide Web, http://litserver.literacy.upenn.edu/tech/index.html.

Stites, R. (1998). Assessing Lifelong Learning Through Technology: A Guide for Choosing and Using Technology for Adult Learning. ERIC Document # ED416422.

Stites, R., Hopey, C., & Ginsburg, L. (1998). Assessing Lifelong Learning Technology (ALL-Tech): A Guide for Choosing and Using Technology for Adult Learning. Retrieved November 1999 from the World Wide Web,

http://litserver.literacy.upenn.edu/tech/index.html.

Turner, T. (1999). *Technology in adult education programs.* In C. Hopey (Ed), Technology, Basic Skills, and Adult Education: Getting Ready and Moving Forward. Retrieved November 1999 from the World Wide Web, http://litserver.literacy.upenn.edu/tech/index.html.

Wagner, D. & Hopey, C. (1998). Literacy, Electronic Networking and the Internet. Retrieved November 1999 from the World Wide Web, http://litserver.literacy.upenn.edu/tech/index.html.

Walker, D. (1978). *A naturalistic model for curriculum development.* In J. Gress & D. Purpel (Eds.), Curriculum: An Introduction to the Field. Pp. 268-280. Berkley, California: McCutchan Publishing.

Waters, G. (1998). *Critical evaluation for educational reform.* Educational Policy Analysis Archives 6(20).

Wilson, J. & Javed, S. (1998). Literacy Learning through Technology. Retrieved November 1999 from the World Wide Web, http://www.nald.ca/fulltext/date98.htm.

Wolf, R. (1990). *The nature of educational evaluation.* In H. Walberg & G. Haertel The International Encyclopedia of Educational Evaluation. Toronto: Pergamon Press. Pp. 8-15.

Worthen, B. (1990). *Program evaluation.* In Walberg, H. & G. Haertel (Eds.), The International Encyclopedia of Educational Evaluation. Pp. 42-47. Toronto: Pergamon Press.

(1999). Standards for Creating Multimedia Learning Modules for Low Literacy and Limited English Proficient Learners. ERIC document # ED429227.